

REMARKS

I. Status of Claims / Claim Amendments

By this Amendment, claims 39, 68, 80, 103, 104, and 107, have been amended, and new claim 110 has been added. Thus, claims 39-41, 43, 45, 47-50, 54, 56, 57, 68, and 79-110 are now present in this application and pending on the merits.

Claims 39 and 68 have been amended to recite, *inter alia*, "wherein said grinding is carried out in one or more stages, ending in a final grinding stage, said aqueous suspension comprising a sub-effective amount of at least one dispersant for the inorganic particulate material at completion of the final grinding stage," which is fully supported by the original specification by at least page 3, lines 3-6, and page 7, lines 29-33. Claims 80, 103, and 104 have been amended to recite, *inter alia*, "a solids level up to about 35% by weight, based on the total weight of the suspension," and claim 107 has been amended to recite, *inter alia*, "a solids level from about 20% to about 30% by weight, based on the total weight of the suspension," which recitations are fully supported by the original specification by at least page 6, lines 26-29. Support for new claim 110 may be found in at least page 3, lines 3-13; page 4, lines 10-15; page 6, lines 26-29; and page 7, lines 29-33. Thus, no new matter has been added by these claim amendments. Therefore, Applicant respectfully requests that the Office enter the claim amendments without objection.

II. Claim Rejections under 35 U.S.C. § 103(a)

A) The Rejections

The Office has rejected claims 39, 40, 43, 45, 47, 48, 54, 56, 57, 68, 80, 81, 83-85, 88-90, 92, 98, and 103-109 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,087,404 to Bown et al. ("Bown"); claims 49, 50, 86, and 87 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Bown in view of U.S. Patent No. 6,315,867 to Skuse et al. ("Skuse"); claims 41, 82, 93-97, and 99-102 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Bown in view of U.S. Patent Publication No. 2002/0117085 to Wesley ("Wesley") and Applicant's allegedly "Admitted Prior Art"; and claims 79 and 91 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Bown in view of U.S. Patent No. 4,915,845 to Leighton et al. ("Leighton"). Office Action at 2-6.

In the claim rejections, the Office asserts that Bown discloses a process for preparing a concentrated aqueous suspension comprising "(A) preparing an aqueous suspension containing particulate material in particulate form, (B) grinding the formed suspension in the presence of polycarboxylate dispersing agent for the particulate material, and (C) adding further dispersing agent to the suspension of ground material" *Id.* at 3. The Office admits that Bown does not specifically mention using a sub-effective amount of dispersants, but asserts that Bown teaches "employing at least 0.05%-1.0% by weight of dispersants, based upon the weight of the dry particulate inorganic material" *Id.* The Office further states that Bown teaches "using at least 20% by weight of particulate inorganic material (Col. 2, lines 27-28 and Col. 3, lines 13-15), which also overlaps with those claimed." *Id.*

The Office admits that Bown does not specifically mention using hexametaphosphate as a dispersant, but asserts that Skuse teaches the use of such a dispersant in an aqueous medium suitable for use as paper coating compositions. *Id.* at 4-5. The Office further admits that Bown does not disclose employing other particulate mineral materials, but asserts that Wesley discloses using well-known particulate mineral materials, such as kaolin, as useful for a variety of applications. *Id.* at 5. The Office also asserts that “applicants acknowledge on pages 8-9 of the specification that the obtained particulate material may be used as a coating or filler for a wide variety of applications.” *Id.*

Finally, while the Office admits that Bown does not mention using a dispersant as a corrosion inhibitor in an aqueous suspension, the Office asserts that Leighton teaches dispersants having corrosion inhibition “to maintain water contaminates in a dispersed state under a wide range of process conditions.” *Id.* at 6.

B) Standard of Law

Obviousness under 35 U.S.C. § 103 must be determined based on the factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 U.S.P.Q. 459 (1966). These inquiries include determining (1) the scope and contents of the prior art; (2) the differences between the prior art and the claims at issue; and (3) the level of ordinary skill in the art. Graham, 383 U.S. at 16-17, 148 U.S.P.Q. at 467; see also KSR Int’l Co. v. Teleflex Inc., 127 S.Ct. 1727, 1734, 82 U.S.P.Q.2d 1385, 1391 (2007) (advising that “the [Graham] factors continue to define the inquiry that controls.”). Applicant respectfully submits that consideration of these Graham factors for the claims of the

present application indicates that those claims are not *prima facie* obvious based on the references relied on in the claim rejections.

C) Applicant's Traversal

As amended herein, the present application contains six independent claims (claims 39, 68, 80, 103, 104, and 110) and 45 total claims. Applicant respectfully submits that each claim of this application is separately patentable and, upon issuance, would be entitled to a separate presumption of validity under 35 U.S.C. § 282. However, solely for convenience in handling this response, Applicant has grouped the pending claims into the following three groups:

Group I - Claims 39-41, 43, 45, 47-50, 54, 56, 57, 68, and 79: Directed to a method of grinding an inorganic particulate material in an aqueous suspension, and an aqueous suspension of at least one ground inorganic particulate material, comprising, *inter alia*, grinding carried out in one or more stages, ending in a final grinding stage, wherein said aqueous suspension comprises a sub-effective amount of at least one dispersant for the inorganic particulate material at completion of the final grinding stage.

Group II - Claims 80-109: Directed to methods of grinding an inorganic particulate material in an aqueous suspension, and an aqueous suspension of at least one ground inorganic particulate material, wherein the aqueous suspension comprises, *inter alia*, a sub-effective amount of at least one dispersant for the inorganic particulate material, wherein said aqueous suspension comprises the inorganic particulate material at a solids level up to about 35% by weight, based on the total weight of the suspension.

Group III - Claim 110: Directed to a method of grinding an inorganic particulate material comprising, *inter alia*, the features of both the Group I claims and the Group II claims described above.

1) **Groups I and III (Claims 39-41, 43, 45, 47-50, 54, 56, 57, 68, 79, and 110)**

Whether taken alone or in any combination, the references of record fail to render obvious the pending Group I or Group III claims at least because they fail to teach or suggest grinding carried out in one or more stages, ending in a final grinding stage, wherein the aqueous suspension comprises "a sub-effective amount of at least one dispersant for the inorganic particulate material at completion of the final grinding stage," as recited by the Group I and III claims.

Both the present application, as well as Bown, teach grinding an aqueous suspension of inorganic particulate material, wherein the grinding may be carried out in one or more stages. See e.g., Applicant's specification at page 7, lines 29-33, and Bown at col. 3, lines 18-30. With respect to each of the claim rejections, the Office has relied upon Bown for allegedly teaching the use of a sub-effective amount of dispersant during grinding. In particular, the Office has asserted that "Bown et al. teach employing at least 0.05%-1.0% by weight of dispersants, based upon the weight of dry particulate inorganic material," which the Office states "is defined by the specification and the claims as 'a sub-effective amount.'" Office Action at 3. However, whatever Bown may teach about the amount of dispersant present during early stages of grinding, Bown does not teach or suggest "a sub-effective amount of at least one dispersant for the inorganic particulate material at completion of the final grinding stage," as recited in the Group I and III claims. Instead, Bown teaches that, while "[d]uring grinding it is not essential that the treated suspension remains (or even starts) in a fully dispersed condition; . . . [i]t is normally required that the final suspension will be fully dispersed,

and will not require further additions of a dispersing agent to render it fluid." Col. 5, lines 46-57. Bown further explains that "[t]he total quantity of dispersing agents used in the method of the invention should be sufficient to provide a fully deflocculated final suspension." Col. 7, lines 63-65. Thus, in contrast to the Group I and III claims, Bown makes clear that, at completion of the final stage of grinding, the amount of dispersant used must be an effective amount "sufficient to provide a fully deflocculated final suspension."

As previously explained, the amount of dispersant comprising a "sub-effective amount" is an amount "not sufficient to give rise to deflocculation of the particulate inorganic material, so that the flocculation characteristics of the suspension are substantially the same as would be found in the complete absence of any dispersant." Applicant's specification at page 3, lines 6-10. As outlined in the specification, the amount of dispersant necessary to deflocculate inorganic particulate materials may vary with the type of dispersant used and the type of particulate material to be dispersed.

While the Office asserts that "Bown et al. teach employing at least 0.05%-1.0% by weight of dispersants, based upon the weight of dry particulate inorganic material" (Office Action at 3), the pending Group I and III claims recite both that "the aqueous suspension comprises up to 0.19% by weight of the at least one dispersant" and that the aqueous suspension comprises "a sub-effective amount of at least one dispersant for the inorganic particulate material at completion of the final grinding stage."

Whatever Bown may teach about the weight-percent of dispersant present during grinding, it makes clear that, at completion of the final stage of grinding, it requires that the amount of dispersant present be an effective amount "sufficient to provide a fully

deflocculated final suspension.” Thus, Bown cannot render *prima facie* obvious the subject matter recited in the pending claims of the present application.

Similarly, Skuse, Wesley, Applicant’s allegedly Admitted Prior Art, and Leighton, regardless of whether they are viewed individually or in combination, fail to supply the above-identified subject matter absent from Bown’s disclosure, nor has the Office asserted that they do. In particular, like Bown, Skuse, Wesley, Applicant’s allegedly Admitted Prior Art, and Leighton fail to teach or suggest at least grinding carried out in one or more stages, ending in a final grinding stage, wherein the aqueous suspension comprises “a sub-effective amount of at least one dispersant for the inorganic particulate material at completion of the final grinding stage,” as recited by the Group I and III claims. As such, Applicant respectfully requests that the rejections of the Group I claims under 35 U.S.C. § 103 be withdrawn, and that the Group I and Group III claims be passed to allowance.

2) Groups II and III (Claims 104-110)

Whether taken alone or in any combination, the references of record additionally fail to render *prima facie* obvious the Group II or Group III claims at least because they fail to teach or suggest grinding an inorganic particulate material in an aqueous suspension comprising a sub-effective amount of at least one dispersant, “wherein said aqueous suspension comprises the inorganic particulate material at a solids level up to about 35% by weight, based on the total weight of the suspension,” as recited by the Group II and Group III claims.

With respect to each of the claim rejections, the Office has relied on Bown for allegedly teaching grinding an inorganic particulate material in an aqueous suspension

comprising a sub-effective amount of at least one dispersant, wherein said aqueous suspension comprises a low solids concentration of inorganic particulate material, based on the total weight of the suspension. In particular, the Office has asserted that Bown teaches "using at least 20% by weight of particulate inorganic material (Col. 2, lines 27-28 and Col. 3, lines 13-15), which also overlaps with those claimed." Office Action at 3. Applicant respectfully submits that the Office has misunderstood the teachings of Bown.

The first portion of Bown to which the Office points for alleged disclosure of grinding at low solids (col. 2, lines 27-28) states "(a) preparing an aqueous suspension comprising at least 20% by weight of the particulate material in coarse particulate form" This is not the same as disclosing a solids level of 20% of the aqueous suspension. Rather, that portion of Bown expressly defines the amount of the particles in the suspension that must be "in coarse particulate form." As is clear, col. 2, lines 27-29 of Bown expressly states that the aqueous suspension comprises "at least 20% by weight of the particulate material in coarse particulate form." In other words, that portion of Bown does not disclose the total solids level of the inorganic particulate material in the aqueous suspension, but only that portion of the particulate material that is in coarse form (i.e., the *total* solids level would contain another 80% or less of particulate material that is not in coarse particulate form).

The second portion of Bown to which the Office points for alleged disclosure of grinding at low solids (col. 3, lines 13-15) states that "[t]he concentration of the particulate inorganic material in the suspension (a) is preferably at least 40% by weight, more preferably in the range of from 60 to 80% by weight." In contrast to the first

portion of Bown cited by the Office, this portion of Bown does appear to teach that the solids content of the aqueous suspension be at least 40% by weight, based on the total weight of the suspension. The language used in col. 3, lines 13-15 of Bown is clearly different from the language used in col. 2, lines 27-29, and is not directed to only the percentage of the material which must be in coarse particulate form, but rather, to the total solids level of the inorganic particulate material in the aqueous suspension.

This reading of the reference is further supported by col. 4, line 63 to col. 5, line 1, which states:

In the preferred three or four grinding stage process embodying the invention described above we prefer that the feed suspension to the first of the last three grinding stages comprises at least 40% by weight, preferably at least 50% by weight and most preferably at least 60% by weight (based on its dry weight) of the particulate inorganic solid material.

Again, the language used in this portion of Bown is clearly different from the language used in col. 2, lines 27-29, and is not directed to only the percentage of the material which must be in coarse particulate form, but rather, to the total solids level of the inorganic particulate material in the aqueous suspension.

As amended herein, the Group II and III claims recite, *inter alia*, "wherein said aqueous suspension comprises the inorganic particulate material at a solids level up to about 35% by weight, based on the total weight of the suspension" While Bown may teach grinding an aqueous suspension at a solids level above 40% by weight, it fails to teach or suggest grinding an inorganic particulate material in an aqueous suspension comprising a sub-effective amount of at least one dispersant, "wherein said

aqueous suspension comprises the inorganic particulate material at a solids level up to about 35% by weight, based on the total weight of the suspension”

Similarly, Skuse, Wesley, Applicant’s allegedly Admitted Prior Art, and Leighton fail to supply the above-identified subject matter absent from Bown’s disclosure, nor has the Office asserted that they do. In particular, like Bown, Skuse, Wesley, Applicant’s allegedly Admitted Prior Art, and Leighton fail to teach or suggest at least grinding an inorganic particulate material in an aqueous suspension comprising a sub-effective amount of at least one dispersant, “wherein said aqueous suspension comprises the inorganic particulate material at a solids level up to about 35% by weight, based on the total weight of the suspension,” as recited by the Group II and III claims. As such, Applicant respectfully requests that the rejections of the Group II claims under 35 U.S.C. § 103 be withdrawn, and that the Group II and Group III claims be allowed.

III. Conclusion

For at least the reasons set forth above, Applicant respectfully requests reconsideration of this application, entry of the amendments, reconsideration and withdrawal of the claim rejections, and allowance of pending claims 39-41, 43, 45, 47-50, 54, 56, 57, 68, and 79-110.

Applicant respectfully submits that the Office Action contains a number of assertions concerning the related art and the claims. Regardless of whether those assertions are addressed specifically herein, Applicant respectfully declines to automatically subscribe to them.

If the Examiner believes that a telephone conversation might advance prosecution, the Examiner is cordially invited to call Applicant's undersigned attorney at (404) 653-6430.

Please grant any extensions of time required to enter this Amendment and charge any additional required fees to our Deposit Account 06-0916.

Respectfully submitted,

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